

RISING
ABOVE



MIAMIBEACH

BE READY: YOUR MIAMI BEACH FLOOD AWARENESS GUIDE

www.mbrisingabove.com

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WELCOME TO YOUR FLOOD AWARENESS GUIDE!

Miami Beach is a beautiful coastal community. Our sun-kissed island is surrounded by the waters of the Atlantic Ocean and Biscayne Bay. Miami Beach is leading the way locally and nationally to reduce flood risk. We want you to be aware of flood risk due to our low-lying topography, extreme rainfall, annual king tides, and storms. It is our goal that all of Miami Beach – whether public roads or private homes – is in the best position possible before, during, and after potential flooding. We are all in this together.

Miami Beach is investing in public infrastructure to reduce flood risk associated with rainfall, storms and sea level rise, and use the best available science to do so. The city is raising roads, installing new stormwater infrastructure, raising sea walls, creating higher elevation standards, and maintaining a healthy dune system.

Miami Beach is part of a unique partnership with Miami-Dade County and the City of Miami called Resilient Greater Miami and the Beaches. Greater Miami and the Beaches was selected to join 100 Resilient Cities, pioneered by the Rockefeller Foundation to address significant resilience issues- including planning and preparing for sea level rise and climate change. Resilience initiatives to prepare for sea level rise also help to reduce our current flood risk. Our program delivers quality of life for residents and visitors today and provides for a sustainable and resilient tomorrow. Learn more at www.resilient305.com

This Guide is your resource for learning about how to reduce your flood risk. **Follow the 10 Steps to Flood Awareness** and review our focused fact sheets about issues important to:

- Property Owners • Tenants • Businesses • Construction Professionals
- Real Estate Agents • Local Organizations



10 STEPS TO FLOOD AWARENESS



1 COASTAL CITIES FACE FLOOD RISK



93% of buildings on Miami Beach are located in a Special Flood Hazard Area, as mapped by FEMA. Miami Beach is reducing risk by elevating roads, updating the stormwater system, and implementing new construction regulations to build higher.

FEMA's detailed digital flood hazard maps reflect current flood risks for Miami Beach. The maps, also referred to as Flood Insurance Rate Maps (FIRMs), illustrate flood hazards throughout Miami-Dade County and are used when determining flood insurance policy rates. View the Flood Zone Maps using Miami-Dade County's interactive web tool. Once you navigate to this web tool, enter your address to view the map for your area. **For confirmation of your property's official flood zone designation, call 305.673.7610 or your insurance agent.**

<http://gisweb.miamidade.gov/floodzone/#FloodZoneMaps>



Flood insurance is required by federally backed mortgages, and recommended for all properties. **The city saves you 20%, or \$6 million dollars annually, in flood insurance premiums** through top tier performance in the Community Rating System (CRS). For more information, visit [Floodsmart.gov](https://www.floodsmart.gov).

Homeowner's insurance policies do not cover damages and losses due to flooding. The City of Miami Beach participates in the National Flood Insurance Program (NFIP) that makes flood insurance available to everyone in the city. We strongly urge you to buy flood insurance to protect yourself from a devastating loss. Information about flood insurance policies should be available to you through your insurance agent. Call your insurance agent now so that you will be prepared for future events. **Do not wait for a disaster.** Keep in mind there is a standard 30-day waiting period, from the date of purchase, before a new flood policy goes into effect.

3 BE SMART IF YOU SEE FLOOD WATERS!

Stay safe - avoid driving through or coming into contact with flood waters. Six inches of fast flowing water can knock you off your feet and less than a meter of water can float a car. Flood water can be contaminated with sewage or other pollutants. There could also be hazards below the surface, like debris, that you cannot see. Make sure you are tuned into Miami Beach social media and local weather alerts. South Florida can experience intense rainfall. Report any flooding to the city via the e-Gov app or by calling 305.604.CITY.



4 KEEP YOUR HOME AND BELONGINGS DRY

There are many simple ways a homeowner can reduce the risk of flood damage. Consider elevating important appliances, like washers and dryers. Choose materials such as tile flooring as opposed to wood, that are resistant to water damage. You can also redirect rain and flood waters through techniques like elevated driveway edges. If you lease your property or business, we recommend discussing your flood protection options with your landlord or property owner.





If you are considering renovation, build resiliently and sustainably! Follow the Florida Building Code and the City of Miami Beach Code to reduce your flood risk. We suggest contacting a professional architect or engineer for advice on how to integrate resilience, sustainability, and flood protection into your design. The city participates in the Property Assessed Clean Energy (PACE) program. PACE is a financial platform that eliminates the barrier of high upfront costs by allowing property owners to pay off energy efficient and storm mitigation home improvements through an assessment on their property tax bill.

An Elevation Certificate is an important document that every homeowner should have, and in case of a disaster, would demonstrate local authorities that your house is at or above the required elevation. An elevation certificate will not only tell you how high your house was built in relation to that flood zone, but can potentially lower your insurance premiums. Miami Beach has been collecting the Federal Emergency Management Agency (FEMA) Elevation Certificate that is prepared by a professional land surveyor on behalf of home builders/developers since 1995 as they are required for all new construction and substantial improvements to a structure. For a list of addresses with available elevation certificates, visit miamibeachfl.gov and select Flood Awareness in the Quick Links.

If the elevation certificate shows that the lowest floor of your house is lower than the required flood design elevation, then the substantial improvement **“50% rule” would apply to your house.** This rule means that if your house is in a flood zone and is damaged and/or improved to an amount greater than 50% of its building market value, the lowest floor will have to be raised to meet the current elevation requirement.

6 OUR NATURAL SYSTEMS PROTECT US AGAINST FLOODS

Beach dunes and vegetation, coral reefs, and green open areas are natural flood barriers. Open green space helps flood waters drain.

Beach dunes and coral reefs serve as the first line of coastal defense by buffering wave energy, blocking storm surge, and protecting coastal infrastructure. Open green space and natural low-lying areas can help with drainage. Landscaping can be designed to flood during rain events or high tides.



7 HAVE A PLAN!

Flooding can range from being unexpected, like a fast and heavy rainfall, to being known and communicated in advance, such as in the case of King Tides and hurricanes. Weather can be unpredictable. Thinking ahead can keep you safe and reduce damage to your property. Think about having sand bags ready, putting up flood panels, adjusting your work schedule if possible, parking your car in a higher location, and wearing rain boots if you must be out in the elements. **Most of all, many times it is best to stay put and give the stormwater system time to drain the water.** At the start of hurricane season, June 1st, visit www.miamibeachfl.gov, review our Hurricane Guide, and develop a plan for these more significant events.





Don't litter! Keep storm drains clear of litter and debris to prevent flooding and keep Biscayne Bay clean. Report issues to the free Miami Beach e-Gov app or call 305.604.CITY.

FINANCIAL ASSISTANCE 9



Relief is available for properties that have experienced damage. Learn more by contacting the Grants Office at 305.673.7510.

MIAMI BEACH IS HERE TO HELP 10



The Building Department offers free technical assistance to **identify ways to reduce flood hazards**. Call 305.673.7610 to learn more.



LEARN MORE THROUGH OUR FACT SHEETS

The following fact sheets were created to provide focused information about flood risk and ways to reduce that risk. They share overall knowledge about the National Flood Insurance Program as well as important tips for target audiences like renters and prospective property owners. The fact sheets have many goals – to be resources of information, but also to help improve specific outcomes, for example, increasing flood insurance coverage for 2-4 unit buildings, and recognizing that keeping stormdrains free of litter reduces flood risk and also keeps Biscayne Bay clean.

For more background on the City of Miami Beach’s communications goals to reduce flood risk, see the Resiliency Communications Plan, a Program for Public Information developed for the National Flood Insurance Program (NFIP) Community Rating System (CRS). The Resiliency Communications Plan can be viewed at miamibeachfl.gov through the Quick Links: Flood Awareness.



MIAMI BEACH & THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

HOW VULNERABLE IS MIAMI BEACH TO FLOODING AND HOW DOES THIS IMPACT INSURANCE COVERAGE?

- The City of Miami Beach participates in the National Flood Insurance Program (NFIP). Due to this, flood insurance is available to building owners and renters.
- Nearly all of Miami Beach is located in or near a Special Flood Hazard Area detailed in Flood Insurance Rate Maps (FIRM).
- **93%** of the buildings are located in the Special Flood Hazard Area, which means insurance is required for buildings with federally backed mortgages. The remaining **7%** are encouraged to carry insurance, being so close to the hazard.
- **84%** of buildings on Miami Beach carry flood insurance policies under the National Flood Insurance Program. It's likely that some buildings do carry additional private insurance – since the coverage limits are quite low in comparison to the high values of many Miami Beach homes (coverage is **\$250,000** for a single family home).
- **64%** of NFIP policies are held by buildings that are Pre-FIRM, meaning they were constructed before the first FEMA Flood Insurance Rate Maps in 1972.
 - Pre-FIRM buildings pay less than the true cost of risk because they are subsidized.
 - Most Pre-FIRM buildings on Miami Beach are lower than Base Flood Elevation (BFE).
 - For a single family home, if the building's lowest livable floor elevation is higher than BFE+2 ft, then the premiums could be cheaper than the subsidized rate.
- **36%** of NFIP policies are held by buildings that are Post-FIRM, meaning they were constructed after the first FEMA Flood Insurance Rate Maps in 1972.
 - In 1994, Miami Beach became an NFIP community. Most homes built after 1994 have elevation BFE+ (higher than FEMA Base Flood Elevation).
 - However, commercial buildings are less likely to be BFE+.

FEMA MODELLING AND MAPS

- The **current FIRM** maps that are in effect for Miami Beach were adopted in **2009**.
- FIRMs only evaluate risk based on the modeling – **they do not use projections from sea level rise or proposed construction to reduce risk.**
- The city will make sure that FEMA has the best and latest available data on newly elevated roads before the maps are finalized.
- Current modeling is underway
 - In **2018**, FEMA will provide the draft work map to the city that will include what they think the FIRM will look like.
 - In **2019**, FEMA will provide preliminary maps, with an 18-month process for these to become effective. We do have the ability to provide new completed road elevations during the preliminary map phase in 2019.
 - In **2021**, FEMA estimates that final maps will be effective.
 - Appeals process - we will be engaged, for a 90-day period where FEMA will accept appeals and comments. At the end, FEMA will evaluate and incorporate or advise. Appeals can come from property owner, local jurisdiction, or neighborhood.

WILL ELEVATING ROADS IMPACT FLOOD INSURANCE?

- According to FEMA and the city's Floodplain Manager, elevating roadways and improving storm water drainage in Miami Beach **will not negatively impact private property flood insurance**. Road elevation is not part of the flood insurance criteria. This question can best be answered in two-parts.

1. Elevating roadways is one of many positive steps a community can take to mitigate risks and increase their resilience to natural hazards.

There are conditions that can make a building uninsurable by the National Flood Insurance Program. **Elevating public roads and improving storm water drainage do not create these conditions.**

2. FEMA modeling and elevating the roads may impact the future FEMA Flood Zone Maps

Once completed, the **elevations associated with the roadways can be taken into account in modeling applied to FEMA's Flood Insurance Rate Maps (FIRM)**, potentially changing modeling results that support the hazards depicted on the maps.

Currently, FEMA is updating these maps in Miami-Dade County, including the City of Miami Beach. Completed work will be incorporated, as possible, into the ongoing modeling. Future changes, or changes unable to be incorporated due to timing issues, can be incorporated through the FEMA Letter of Map Change process. **Any change in Base Flood Elevation on personal property, regardless of its origin, will impact the flood insurance rating, which is done on an individual structure basis taking into consideration a number of flood risk factors.** We expect draft maps for comment by 2018 and final maps by 2021. The city will make sure that FEMA has the best and latest available data before the maps are finalized. Existing maps are located here: <https://gisweb.miamidade.gov/floodzone/>

WHAT IS THE CITY DOING TO REDUCE YOUR PERSONAL FLOOD INSURANCE PREMIUMS?

The city participates in the National Flood Insurance Program Community Rating System. **Our score currently saves residents 20% on their flood insurance premiums – an estimated \$6 million annually.**

The National Flood Insurance Program rates are governed federal legislation. For the most recent information about your property and building type, speak to your flood insurance agent and visit www.fema.gov/flood-insurance-reform. **The most effective way to reduce the cost of flood insurance in Miami Beach is for the lowest livable floor of a property to be above the FEMA Base Flood Elevation (BFE).**

10 STEPS TO FLOOD AWARENESS

- 1. Coastal cities face flood risk.** Miami Beach is planning and acting to reduce risk.
- 2. Protect your property with flood insurance.** Flood damage is not covered by standard homeowner, renter, or wind storm insurance.
- 3. Be smart if you see flood waters.** Avoid driving through or coming in contact with flood waters.
- 4. Keep your home and belongings dry.** Elevate important mechanical, electrical, and important items.
- 5. Build resiliently.** Follow the Florida Building Code and Miami Beach Codes. Understand your elevation by obtaining an Elevation Certificate.
- 6. Natural systems protect us from floods.** Beach dunes, the coral reef tract, and open green areas are natural flood barriers.
- 7. Have a plan.** We can experience flooding from storms, hurricanes and King Tides.
- 8. Keep it clean.** Storm drains lead to beautiful Biscayne Bay.
- 9. Financial assistance** can help address damage for repetitive loss areas.
- 10. Miami Beach is here to help.** The Building Department offers free technical assistance.

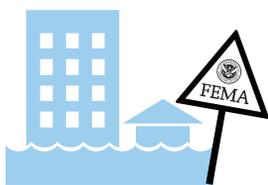


INTERESTED IN RESILIENT CONSTRUCTION ON MIAMI BEACH?

Miami Beach is a beautiful coastal community. Our sun-kissed island is surrounded by the waters of the Atlantic Ocean and Biscayne Bay. Miami Beach is leading the way locally and nationally to reduce flood risk and we want you to be aware of flood risk from extreme rain, annual King Tides, and storm surge. We are investing in public infrastructure to help our streets and sidewalks drain as quickly as possible. This includes raising roads, installing stormwater pumps, raising sea walls, implementing green infrastructure, and creating higher elevation standards for new construction. We also save residents and businesses \$6 million annually in flood insurance premiums through our strong participation in the Community Rating System.

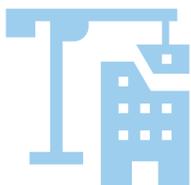
As a resident or a design/ construction professional, we want you to be aware of your flood risk, build resiliently to reduce your risk, and understand what resources are available to you. It is our goal that all of Miami Beach – whether public roads or private homes – is in the best position possible before, during, and after potential flooding. We are all in this together.

WHY SHOULD YOU REDUCE YOUR RISK?



93% OF BUILDINGS

are located in a FEMA special flood hazard area (SFHA).
Protect your property with flood insurance.



64% OF BUILDINGS

were constructed before FEMA Flood Insurance Rate
Maps that require higher construction.

RESILIENT CONSTRUCTION CAN REDUCE DAMAGES AND REDUCE THE COST OF FLOOD INSURANCE.



WHAT CAN YOU DO?

TIPS FOR CONTRACTORS AND PROPERTY OWNERS

Elevate, Elevate, Elevate! Reduce your risk of damage from flooding – and save money on flood insurance also.

- Build higher than FEMA requires. Miami Beach requires new construction to be more than one to five feet higher than Base Flood Elevation.
- Elevate important appliances, like air conditioning, water heater, and washers and dryers.
- Elevate electrical plugs to a higher location higher on walls.
- Redirect rain and flood waters through techniques like elevated driveway edges.

Build responsibly

- If your project will be reviewed by any of the four land use boards, contact the Planning Department to discuss resiliency review criteria.
- Miami Beach requires LEED Gold or Living Building Challenge Certification for certain new construction.
- Choose construction materials that are resistant to water damage below base flood elevation, such as tile flooring and cement instead of wood.
- Permits are required – follow all Florida Building Code and Miami Beach Codes to make sure you are meeting all requirements.
- Insert flood openings in areas such as garages and lobbies, to allow the flow of water in the event of flooding. This can lower your cost of flood insurance.
- Obtain an elevation certificate when the lowest floor slab is poured and prior to obtaining a final building inspection approval to ensure the lowest finished floor elevation is elevated at or above the Design Flood Elevation.
- Provide positive and adequate drainage away from the structures and prevent flooding the neighbor properties.

Protect natural floodplain functions

- Integrate salt tolerant vegetation and green open areas as they are natural flood barriers. Open green space helps flood waters drain.

Have a plan! South Florida can experience flooding from storms, hurricanes and King Tides

- Have a storm, hurricane and King Tides plan. Follow Miami-Dade Municipal Code to secure the construction site. Fasten down or remove hazardous objects. Know evacuation routes. See <http://www.miamidade.gov/hurricane/>
- Park your car in an elevated garage floor.

Technical Assistance:

- Building Department and Floodplain Management staff can provide you information on flood zone determination, Florida Building Code, flood damage prevention regulations and requirements, 50% rule and FEMA retrofitting technique guides. Please contact the Building Department at 305.673.7610.

Helpful Sources:

- **Flood Map Zone Information:** <http://gisweb.miamidade.gov/floodzone/> or <https://msc.fema.gov/portal>
- **National Flood Insurance Program:** <https://www.fema.gov/national-flood-insurance-program>
- **FEMA:** www.fema.gov
- **Florida Building Code:** https://www.floridabuilding.org/bc/bc_default.aspx
- **FDEP:** <http://www.dep.state.fl.us/mainpage/default.htm>
- **Florida Municipal Codes:** <https://www.municode.com/library/fl>
- **Miami Beach Flood Awareness:** <http://www.miamibeachfl.gov/building/kiosk7/scroll.aspx?id=38768>



ARE YOU INTERESTED IN PURCHASING PROPERTY ON MIAMI BEACH?

As a prospective property owner, you may have questions about flood risk and flood insurance. **Miami Beach is a coastal community that's an unparalleled paradise with culture and community** to meet all our diverse residents' needs. Our sun-kissed island is surrounded by the beautiful waters of the Atlantic Ocean and Biscayne Bay. We want you to be aware of flood risk, but also know that Miami Beach is leading the way locally and nationally to reduce that risk.

The city is investing in public infrastructure to help our streets and sidewalks drain as quickly as possible. This includes raising roads, installing stormwater pumps, raising sea walls, and creating higher elevation standards for new construction and substantial improvement. Our natural resources, including the coral reef tract, and the beach dune system protect the eastern side of our island from wave energy and storm surge events. The city coordinates closely with our local, state and federal partners to preserve and protect these resources.



- **93% of buildings** in Miami Beach are located in a Special Flood Hazard Areas (SFHA) as mapped by Federal Emergency Management Agency (FEMA). Because of this, flood insurance is required for federally backed mortgages, and recommended for all properties. You can view the city's flood zone information here <https://gisweb.miamidade.gov/floodzone/>.



- **Know your elevation.** The city may have an elevation certificate on file for the structures that were built after 1995. Having your elevation certificate will help you understand your property's elevation and may help you obtain the best flood insurance rates. Contact the Miami Beach Building Department at 305.673.7610 ext. 6770 or 6165. For more information, visit www.fema.gov/elevation-certificate.



- **The city can provide you with available information of history of flooding in your area.** Contact the Miami Beach Building Department and Floodplain Management staff for this information and your flood zone determination: 305.673.7610 ext. 6770 or 6165.



ARE YOU INTERESTED IN PURCHASING PROPERTY ON MIAMI BEACH?



• **If you are considering renovation**, build resiliently and sustainably! You will need to follow the Florida Building Code and the City of Miami Beach Code. We suggest you contact a professional architect or engineer for advice on how to integrate resilience, sustainability, and flood protection into your design. The city also participates in the PACE program, a way to finance sustainability improvements for home renovations. More information on this program can be found here: <http://www.miamibeachfl.gov/green/scroll.aspx?id=51636>



• **Considering new landscaping with your new home?** Choosing “Florida Friendly” is wise – helping to protect the environment, birds, bees, and butterflies! Florida Friendly Plants Guide: <http://fyn.ifas.ufl.edu>



• **The city participates in the National Flood Insurance Program Community Rating System.** Our Community Rating System (CRS) score currently saves residents and businesses up to 20% on their flood insurance premiums – an estimated \$6 million annually. For more information about flood insurance rates, we advise you to contact your flood insurance agent and visit National Flood Insurance Program’s website at www.floodsmart.gov.

HELPFUL RESOURCES

Interested in learning about city improvement projects in your new neighborhood? Check out the City of Miami Beach Capital Improvement Projects Update Information: <http://mbplannedprogress.com/projects/neighborhood-improvements>

- Need more information on Flood awareness? See our Flood Awareness Guide: www.miamibeach.gov and select flood awareness from Quick Links
- Curious to see the Miami Beach flood zone? See <https://gisweb.miamidade.gov/floodzone/>
- Learn more about Climate Change and planning efforts: Southeast Florida Climate Change Compact <http://www.southeastfloridaclimatecompact.org/>
- See our adaption calculator at <https://gisweb.miamibeachfl.gov/calculator>

10 STEPS TO FLOOD AWARENESS

1. **Coastal cities face flood risk.** Miami Beach is planning and acting to reduce risk.
2. **Protect your property with flood insurance.** Flood damage is not covered by standard homeowner, renter, or wind storm insurance.
3. **Be smart if you see flood waters.** Avoid driving through or coming in contact with flood waters.
4. **Keep your home and belongings dry.** Elevate important mechanical, electrical, and important items.
5. **Build resiliently.** Follow the Florida Building Code and Miami Beach Codes. Understand your elevation by obtaining an Elevation Certificate.
6. **Natural systems protect us from floods.** Beach dunes, the coral reef tract, and open green areas are natural flood barriers.
7. **Have a plan.** We can experience flooding from storms, hurricanes and King Tides.
8. **Keep it clean.** Storm drains lead to beautiful Biscayne Bay.
9. **Financial assistance** can help address damage for repetitive loss areas.
10. **Miami Beach is here to help.** The Building Department offers free technical assistance.



WHAT TO DO BEFORE, DURING, AND AFTER A FLOOD

Miami Beach is a beautiful coastal community. Our sun-kissed island is surrounded by the waters of the Atlantic Ocean and Biscayne Bay. Miami Beach is leading the way locally and nationally to reduce flood risk and we want you to be aware of flood risk from major rain events, hurricanes, and storm surge. It is our goal that all of Miami Beach – whether public roads or private homes – is in the best position possible before, during, and after potential flooding.

BEFORE A FLOOD



- **93% of buildings** in Miami Beach are located in a FEMA Special Flood Hazard Area. Understand your flood risk, know your flood zone, and consider obtaining an elevation certificate to evaluate your property flood risk.



- Make sure you are tuned into Miami Beach social media and local weather alerts. Report any flooding to the city via the free Miami Beach e-Gov app or by calling 305.604.CITY.



- **Locate your flood insurance policy** to be ready in the case you may need to file a claim for damage.



- **Protect** your non-residential building with flood barriers.



- **Elevate** mechanical equipment and appliances, as able, if you anticipate that waters may enter areas such as your garage.



- **Avoid parking your vehicle in low lying areas**- move it to higher ground, such as a parking garage.



- **Don't litter.** Keep public storm drains clear. Report issues on the Miami Beach e-gov app or call 305.604.CITY.



- **Have a storm and hurricane plan.** Protect yourself and your property. Know your evacuation route.



- **Contact** the Building Department 305.673.7610 and Public Works Department 305.673.7080 for technical advice on how to reduce flood hazard.

DURING A FLOOD



- **Be smart if you see flood waters!** Stay safe – avoid driving through or coming in contact with flood waters. Six inches of fast flowing water can knock you off your feet and less than a meter of water can float car.



- **Flood water can be contaminated with sewage or other pollutants.** There could also be hazards below the surface, like debris, that you cannot see.

AFTER A FLOOD



- **Report** any flood damage to your insurance agent.



- **Clean and disinfect** everything that got wet.



- **Wash your car**, including the undercarriage, if it came in contact with flood waters.



- **Rinse landscaping** if it came into contact with flood waters.



- **Don't enter a flooded building** until it's been cleared by local authorities.



- **Take pictures of the damage.** Document both the building and contents.



- **Mitigate while you repair.** Make changes to prevent the risk of water damage in the event of any future flood events.



- **Stay Alert.** Continue monitoring the status of a flood or high tide via social media, television or radio, report flooding to the city via the Miami Beach e-Gov app or by calling 305.604.CITY



- If your house is in a flood zone and is damaged and/or improved to an amount greater than 50% of its building market value, the lowest floor will have to be raised to meet the current elevation requirement. **Call the Building Department** at 305.673.7610 to learn more.



- **FEMA financial assistance is available** for repetitive loss and substantial damage properties. Call the Grants office at 305.673.7510 to learn more.

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WHY EXTREME RAIN EVENTS CAUSE FLOODING

Miami Beach is a beautiful coastal community. Our sun-kissed island is surrounded by the waters of the Atlantic Ocean and Biscayne Bay. Miami is leading the way locally and nationally to reduce flood risk, however we want you to be aware and protect yourself and your property.

Flooding can range from being unexpected, like a fast and heavy rainfall, to being known and communicated in advance, such as in the case of King Tides and hurricanes.

Weather can be unpredictable. Thinking ahead can keep you safe and reduce damage to your car and home. Think about having sand bags ready, putting up flood panels, adjusting your work schedule if possible, parking your car in a higher location, and wearing rain boots if you must be out in the elements. Most of all, many times it is best to stay put and give the stormwater system time to drain the water.

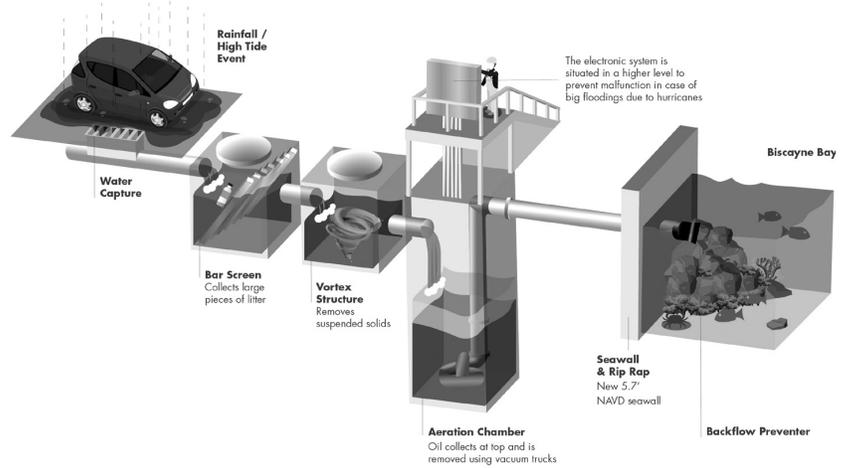
At the start of hurricane season, June 1st, visit www.miamibeachfl.gov, review our Hurricane Guide, and develop a plan for these more significant events.

WHY DOES MIAMI BEACH HAVE FLOODING CHALLENGES?

- **It is difficult to drain a city** that is an island, flat, and only a few feet above sea level in many places. Since we are flat, we lack the energy for drainage created by gravity, and water drains slowly.
- **Miami Beach's hydrology makes draining rainwater difficult.** We have a high groundwater table that reduces the ground's ability to absorb rainwater. In addition, the subsurface is porous limestone, and is affected by the surrounding Bay and Ocean water.
- **Many of our outfalls are tidally influenced.** An outfall is the location where the stormwater exits the system to a water body. This means the higher the tide, the more slowly stormwater can drain.
- **Miami Beach is densely populated.** At only 7 square miles, we lack large open spaces, such as wetlands, to drain rainwater. Impervious surfaces, hard surfaces like concrete, do not allow rain to soak in. These surfaces contribute to the amount of runoff and how fast the runoff travels to the collection system.
- **If all rain was slow and gentle**, we would be less at risk for flooding. However, all rain storms are different.

HOW DOES RAINWATER DRAIN? WHAT ABOUT PUMPS?

1. Rain falls to the ground and runs off impervious surfaces. Stormwater flows across the land, over parking lots, through swales, down ditches, along gutters, and eventually makes its way to storm grates.
2. Stormwater flows into storm grates and is collected in the basin.
3. Stormwater flows from catch basin into the system of stormwater pipes.
4. Stormwater flows through conveyance system to the outfall. Miami Beach is now moving to a system of pumps to more quickly and effectively drain the water to the outfalls.



Each of these four steps requires an amount of time to accomplish, so no matter how a system is designed, draining an area of land can never be instantaneous. Each of these four steps offers an opportunity for a bottleneck to develop and slow down the whole process. **If the rain falls at a faster rate than any one of the steps can accommodate, the system will back up and ponding (standing water) will occur.**

For practicality and cost-effectiveness, new stormwater collection systems are designed to accommodate the runoff from a rain event of a certain intensity and duration, called the design storm. Any rain event larger than the design storm will cause the system to back up. The flatter the land, the slower the water will move, and the more time it will take to drain an area of land.

We are all in this together. Miami Beach is installing a new stormwater collection system and pumps to reduce the risk of flooding. This is an ambitious program, with construction planned over the next ten-years, and we are leading the way locally and nationally. To learn more, visit www.miamibeachfl.gov and select Flood Awareness.

10 STEPS TO FLOOD AWARENESS

1. **Coastal cities face flood risk.** Miami Beach is planning and acting to reduce risk.
2. **Protect your property with flood insurance.** Flood damage is not covered by standard homeowner, renter, or wind storm insurance.
3. **Be smart if you see flood waters.** Avoid driving through or coming in contact with flood waters.
4. **Keep your home and belongings dry.** Elevate important mechanical, electrical, and important items.
5. **Build resiliently.** Follow the Florida Building Code and Miami Beach Codes. Understand your elevation by obtaining an Elevation Certificate.
6. **Natural systems protect us from floods.** Beach dunes, the coral reef tract, and open green areas are natural flood barriers.
7. **Have a plan.** We can experience flooding from storms, hurricanes and King Tides.
8. **Keep it clean.** Storm drains lead to beautiful Biscayne Bay.
9. **Financial assistance** can help address damage for repetitive loss areas.
10. **Miami Beach is here to help.** The Building Department offers free technical assistance.



King tides are the highest and most extreme tides of the year. Gravitational forces and the alignment of the sun and moon cause the tides to change throughout the year. Since King Tides can cause flooding, it's important to have flood insurance and stay safe.

WHAT ARE KING TIDES?

The King Tide is the highest predicted high tide of the year. During this period, water levels are higher than that on an average day. In Miami Beach, the king tides usually occur during the months of September, October, and November. King tides provide a preview of the normal tidal variations we will see in the years to come as sea levels continue to rise.

HOW ARE KING TIDES PREDICTED?

In the United States, tides are predicted by the National Oceanic and Atmospheric Administration (NOAA). The NOAA Tides and Currents station map can be used to locate stations that provide water levels, meteorological observations and current observations. The Virginia Key station is the closest NOAA Monitoring Site. The city has also deployed two tide gauges to monitor tides.

WHAT CAN INFLUENCE THE TIDES?

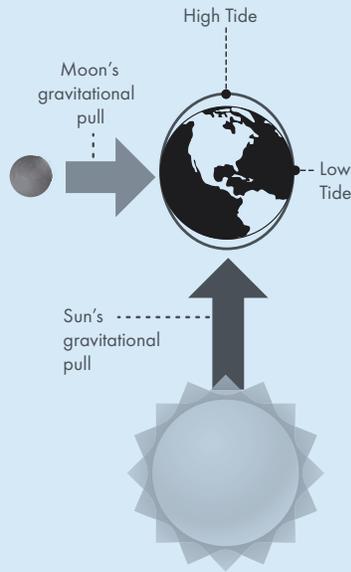
The relative distances and positions of the sun, moon and Earth all affect the size and magnitude of the Earth's two tidal bulges. On a smaller scale, the magnitude of tides can be influenced by the shape of the shoreline and the gulfstream current. According to the NOAA Ocean Service Education local wind and weather patterns can also affect tides. King tides can reach over 12 inches above the average high tide for the year.

THE MOON

When the moon is closest to the Earth, also known as the perigee, its gravitational pull is the greatest. The moon has more influence on the tides than the sun does.

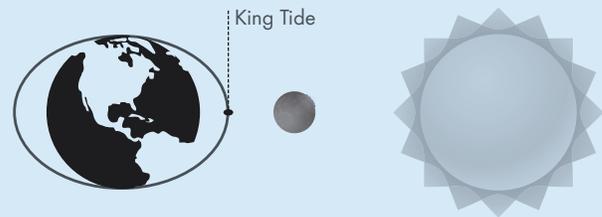
THE SUN

The sun also plays a key role in creating King Tides. When it's closest to the Earth, it exerts its peak gravitational pull on the Earth. This is known as the perihelion.



KING TIDES

When the Sun, Moon and Earth align at the perigee and perihelion, solar gravity combines with lunar gravity. This creates King Tides.



King Tides generally occur during the months of October, November and December.

Perigee: The point when an object in orbit is closest to Earth.

Perihelion: The point when an object in orbit is closest to the sun.

WHAT CAN YOU DO?

- Make sure you have flood insurance for your home.
- Do not drive through flooded areas. Turn around and find another way. It can be a threat to your life, as well as cause short and long term damage to your vehicle.
- Do not put yourself and others at risk of injury by walking or driving through flood water – six inches of fast flowing water can knock you off your feet and less than a meter of water can float a car.
- If you drive through tidal floods, wash the undercarriage of your car to remove the salt water. You can go through a car wash equipped with an undercarriage sprayer.
- Avoid coming into direct contact with flood water as it may be contaminated with sewage and other pollutants.
- Internal and external flooding can result in hazards below the surface you cannot see that could cause injury (e.g. nails, broken glass, debris and displaced manhole covers).
- Do not allow children to play in or near flood water and encourage them to wash their hands regularly.
- If you are a boater, check the tides before leaving the dock. These high tides cause lower clearances under fixed bridges.
- Landscaping inundated with water should be rinsed off. If your landscape encounters salt water flooding, make sure the area is rinsed off and/or rained on thoroughly before adding fertilizer or pesticides.

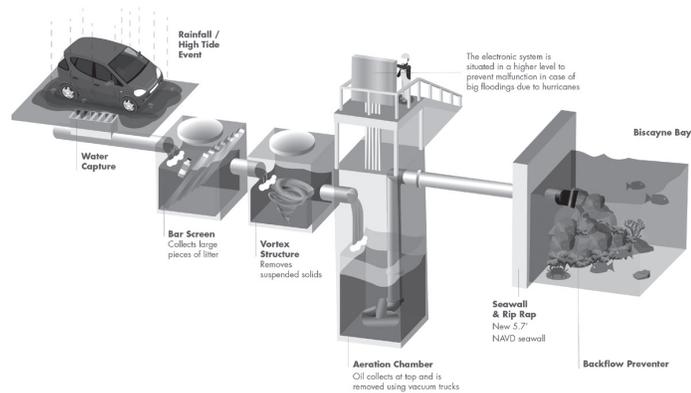
WHAT IS THE OVERALL PLAN?

Miami Beach is reducing the risk of flooding from King Tides through raising streets as needed and installing a storm drain collection system on pump stations that can drain about 7.5 inches of water in 24 hours. In addition, dune restorations, public seawall improvements and new regulations are ongoing to make the city more resilient to sea level rise and climate change.

KEEP IT CLEAN!

Miami Beach is a beautiful coastal community. Our sun-kissed island is surrounded by the waters of the Atlantic Ocean and Biscayne Bay. Miami Beach is leading the way locally and nationally to reduce flood risk. We want you to be aware of flood risk due to our low-lying topography, rainfall, annual king tides, storms, and sea level rise. It is our goal that all of Miami Beach – whether public roads or private homes – is the best position possible before, during, and after potential flooding.

Miami Beach is investing in public infrastructure and using the best available science to do so. The city is raising roads, installing stormwater pumps, raising sea walls, and creating higher elevation standards for new and substantial improvements. Our program delivers quality of life for residents and visitors today and provides for a sustainable and resilient tomorrow.



Keeping our **streets clean** and **construction sites clean** contributes to the proper operation of our **storm drains, allowing them to remove stormwater efficiently**. All of this helps to protect our assets while keeping Biscayne Bay clean.

MIAMI BEACH

- Is one of 30 permitted entities allowed to discharge stormwater in Miami-Dade County.
- Manages approximately 3.8% of the 8,000 outfalls in the county.
- Has implemented a new, pump-based stormwater system that uses a multi-step filtering process, which helps prevent litter and debris from reaching Biscayne Bay.
- Sweeps 177 miles of streets daily, removing more than 450,000 lbs. of sweeping material. This number includes 1,300+ lbs. of nitrogen and 840+ lbs. of phosphorous that would have otherwise reached Biscayne Bay.
- Cleaned approximately 80% of our storm water system (catch basins, pipes, outfalls), compared to 33% in previous years.



We all have a role in keeping the city as clean as possible by ensuring that waste, pollutants, nutrients and litter don't fall through the outfalls. This action helps to reduce the risk of flooding by allowing stormwater to flow as quickly as possible off streets, as well as public and private property.

Report issues to the free Miami Beach e-Gov app or call 305.604.CITY.



DO YOU LIVE IN A 2-4 UNIT BUILDING ON MIAMI BEACH?

Miami Beach is a beautiful coastal community. Our sun-kissed island is surrounded by the waters of the Atlantic Ocean and Biscayne Bay. Miami Beach is leading the way locally and nationally to reduce flood risk and we want you to be aware of flood risk due to our low-lying topography, rainfall, annual King Tides, storms, and sea level rise. It is our goal that all of Miami Beach – whether public roads or private homes – is in the best position possible before, during, and after potential flooding. We are all in this together.

ARE YOU INSURED?

Only **46%** of 2-4 unit buildings carry flood insurance, while **93%** of buildings in Miami Beach are located in a Special Flood Hazard Areas (SFHA) as mapped by Federal Emergency Management Agency (FEMA).

- Flood insurance is required for federally backed mortgages, and recommended for all properties.
- Renters can buy flood insurance coverage for contents. See the fact sheet for Renters for more information.

WHAT IS MIAMI BEACH DOING TO REDUCE FLOOD RISK AND SAVE YOU MONEY?

- Miami Beach has made a commitment to invest in public infrastructure to help our streets and sidewalks drain as quickly as possible. This includes raising roads, installing stormwater pumps, raising sea walls, and creating higher elevation standards for new construction and substantial improvement. Our natural resources, including the coral reef tract, and the beach dune system protect the eastern side of our island from wave energy and storm surge events.
- Miami Beach saves residents and businesses \$6 million annually in flood insurance premiums through our strong participation in the Community Rating System.

HOW CAN YOU OBTAIN FLOOD INSURANCE?

- Log onto the National Flood Insurance Program website for details and use its agent locator tool to find a local flood insurance agent. www.floodsmart.gov



DO YOU RENT ON MIAMI BEACH? CHECK OUT THESE FLOOD AWARENESS TIPS FOR TENANTS

Miami Beach is a beautiful coastal community. Our sun-kissed island is surrounded by the waters of the Atlantic Ocean and Biscayne Bay. Miami Beach is leading the way locally and nationally to reduce flood risk. We want you to be aware of flood risk due to our low-lying topography, rainfall, annual King Tides, storms, and sea level rise. We also want you to have the best insurance protection in case of flood damage.

FLOOD INSURANCE FOR RENTERS



- **93% of buildings** in Miami Beach are located in a Special Flood Hazard Areas (SFHA) as mapped by Federal Emergency Management Agency (FEMA). Because of this, flood insurance is required for federally backed mortgages, and recommended for all properties.

- Renters can buy flood insurance coverage for contents. There is a **\$100,000** cap on coverage for renters' contents.



- **Insuring your possessions** is just as important as financially protecting the structure of your home or business. Even a few inches of water can cause tens of thousands of dollars in damage. Without flood insurance to cover those losses, your financial security may be at risk.

- **Flood insurance coverage** for the building or single family home should be held by the property owner. Speak to your landlord to understand the available coverage. You should have a good understanding of what this does, and doesn't cover for you as a tenant.



- If the foundation shifts in a flood and the building is condemned, you would not be allowed in for your belongings. However, this loss scenario would be covered by a **flood policy**.

WHAT ELSE SHOULD YOU CONSIDER?

- If considering renovation materials, choose materials such as tile as opposed to wood, that are resistant to water damage.
- Since Miami Beach is vulnerable to flooding, check with your landlord to understand what kind of preparations will be made to protect your building, your unit, and your belongings. It's a good idea to also ask this about hurricane preparation.



WHAT IS MIAMI BEACH DOING TO REDUCE FLOOD RISK AND SAVE YOU MONEY?



- Miami Beach is investing in public infrastructure to help our streets and sidewalks drain as quickly as possible. This includes raising roads, installing stormwater pumps, raising sea walls, and creating higher elevation standards for new construction and substantial improvement. Our natural resources, including the coral reef tract, and the beach dune system protect the eastern side of our island from wave energy and storm surge events.
- Miami Beach saves residents and businesses \$6 million annually in flood insurance premiums through our strong participation in the Community Rating System.

HOW CAN YOU OBTAIN FLOOD INSURANCE?

- Log onto the National Flood Insurance Program website for details and use its agent locator tool to find a local agent who sells flood insurance. www.floodsmart.gov



FEMA RESOURCES

Insuring your possessions is just as important as financially protecting the structure of your home or business. Even a few inches of water can cause tens of thousands of dollars in damage. Without flood insurance to cover those losses, your financial security may be at risk. Personal property coverage, commonly known as contents coverage, is an important option to consider because it is not automatically included in your Standard Flood Insurance Policy.

Currently, only 1 in 4 homeowners with a standard flood insurance policy is covered for damage to their contents. However, contents coverage is available to homeowners, business owners, and renters to financially protect belongings from potential flood damage.

CONTENTS COVERAGE IN HIGH-RISK AREAS

Property owners who live in high-risk areas with a mortgage from a federally regulated or insured lender are required to purchase flood coverage for their building, but the requirement does not automatically extend to contents coverage. Coverage up to \$100,000 is available.

For example, a homeowner living in Zone AE (a high-risk area), can purchase \$100,000 of building coverage to meet the lender requirement. For an additional charge, the homeowner can add \$30,000 of contents coverage for their personal property.

Personal property coverage of up to \$100,000 is also available for renters. Business owners can purchase up to \$500,000 of coverage for contents in their building.

LOWER-COST FLOOD INSURANCE OPTIONS

Visit FloodSmart.gov/contents to learn more about how to prepare for floods and the benefits of purchasing flood insurance. To learn more about obtaining a policy, call your insurance agent or 1.800.427.2419 to find an agent near you.

If your property is located in a moderate - to low-risk area, your flood risk is reduced, but not removed. You may be eligible for a lower-cost Preferred Risk Policy (PRP) that provides building and contents coverage or contents-only coverage.

WHAT COULD YOU LOSE IN A FLOOD?

Contents coverage pays the Actual Cash Value of your belongings. In a flood, you could lose such personal items as televisions, computers, clothes, toys, couches, and much more. Without personal property coverage included in your flood insurance policy, you could end up paying for all of these losses. A thorough home inventory to document your belongings will help if you need to file a flood insurance claim. For more information and tips, visit knowyourstuff.org.



WHY DO BUSINESSES NEED FLOOD INSURANCE?

As a business operating in Miami Beach, you may have questions about flood risk and flood insurance.

Although our sun-kissed island is surrounded by the beautiful waters of the Atlantic Ocean and Biscayne Bay, Miami Beach is vulnerable to flooding due to its low-lying topography, rainfall, annual King Tides, storms, and sea level rise. We want you to be aware of your flood risk, insure your business, and understand what resources are available to you.

The City of Miami Beach is leading the way locally and nationally to reduce risk. We are investing in public infrastructure to help our streets and sidewalks drain as quickly as possible. This includes raising roads, installing storm water pumps, raising sea walls, implementing green infrastructure, and creating higher elevation standards for new construction. We save residents and businesses \$6 million annually in flood insurance premiums through our strong participation in the Community Rating System.

ARE YOU INSURED?



Only 17% of non-residential buildings carry flood insurance.



While 93% of all buildings are located in a FEMA Special Flood Hazard Area.

HELPFUL RESOURCES

City of Miami Beach:

www.miamibeachfl.gov

City of Miami Beach Floodplain Manager:

305.673.7610

FEMA:

www.fema.gov

MDC-Flood Zone Determination:

<http://gisweb.miamidade.gov/floodzone/>

MDC-Storm Surge Planning Zone & Map:

<http://www.miamidade.gov/fire/storm-surge.asp>

Southeast Florida Climate Change Compact:

www.southeastfloridaclimatecompact.org

National Flood Insurance Program:

www.floodsmarts.gov

Ready:

www.ready.gov

American Red Cross:

www.redcross.org

Insurance Institute for Business & Home Safety:

<http://disastersafety.org/flood>

Florida Division of Emergency Management:

Land Area Within FEMA Flood Zones

Total Urban Area = 7.22 Square Miles
 Flood Zone AE = 7.02 Square Miles or 97.2 %
 Flood Zone VE = 0.03 Square Miles or 0.004 %
 Flood Zone X = 0.17 Square Miles or 0.024 %
 Flood Insurance Is Required For AE and VE Flood Zones



000000 1	DATE	8/18/2017
	DRAWN	WCR/NAV
	SCALE	Not To Scale
	DESIGNED BY	Amy Knowles
	FILENAME	FEMA_Flood_Zones_105



**Miami Beach FEMA
 Flood Zones And Base
 Flood Elevation (BFE)**

	AE-10		AE-8		VE-9
	AE-9		VE-11		X





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ABOVE



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